SGaan Kinghlas – Bowie Seamount At-sea Observer Coral and Sponge Sample Collection, May and June 2016

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SGAAN KINGHLAS - BOWIE SEAMOUNT AT-SEA OBSERVER CORAL AND SPONGE SAMPLE COLLECTION, MAY AND JUNE 2016.

By

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In 2016, recent management measures for the Sablefish fishery within the SGaan Kinghlas-Bowie Seamount Marine Protected Area (SK-B MPA) required an at-sea observer for fishing activities during both a May and June fishing trip. This document summarizes the results of at-sea observer sample and data collection activities on board the F/V *Ocean Aggressor* between May 1 and May 14, 2016 and on board the F/V *Pacific Viking* between May 29 and June 29, 2016. This document details the results of the collection of coral and sponge bycatch in accordance with the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements. The at-sea observer reported sponges were caught on 3 occasions; corals were caught 19 times during the 76 fishing events completed in the two fishing trips. The catches were comprised of two species of sponge and six species of coral that were confirmed from samples and photographs collected by the at-sea observer and detailed in this report.

RÉSUMÉ

Buchanan, S., H. Gartner and A. Keizer. 2018. Prélèvement d'échantillons de coraux et d'éponges par le programme des observateurs en mer au mont sous-marin Bowie (SGaan Kinghlas) en mai et juin 2016. Can. Data Rep. Fish. Aquat. Sci. 1282: v + 14 p.

En 2016, de récentes mesures de gestion relatives à la pêche à la morue charbonnière dans la zone de protection marine du mont sous-marin Bowie (ZPM du SGaan Kinghlas) exigeaient la mise en place d'un programme d'observateurs en mer pour surveiller les activités de pêche ayant lieu durant un voyage particulier au mois de mai et au mois de juin. Le présent document résume les résultats des prélèvements d'échantillons et de données qui ont été effectués dans le cadre du programme des observateurs en mer sur le navire de pêche *Ocean Aggressor*, du 1er au 14 mai 2016, et sur le navire de pêche *Pacific Viking*, du 29 mai au 29 juin 2016. Le présent document offre des détails sur les résultats du prélèvement de prises accessoires de coraux et d'éponges, conformément aux exigences provisoires relatives au prélèvement de données sur les coraux et les éponges dans le cadre du programme des observateurs au mont sous-marin Bowie (SGaan Kinghlas). Le programme des observateurs en mer a déterminé qu'au cours des 76 sorties de pêche qui ont eu lieu durant les deux voyages, des éponges ont été capturées à trois (3) reprises et des coraux à dix-neuf (19) reprises. Il a été confirmé, grâce aux échantillons et aux photographies recueillis par le programme des observateurs en mer, que ces prises se composaient de deux (2) espèces d'éponge et de six (6) espèces de corail. Le présent rapport offre des détails sur ces espèces.

1.0 INTRODUCTION

In 2014 new management measures for the Sablefish fishery within the SGaan Kinghlas-Bowie Seamount Marine Protected Area (SK-B MPA) were introduced. Fishery management measures include the requirement to carry an at-sea observer during sablefish (*Anoplopoma fimbria*) fishing activities to collect catch information, biological samples, and to facilitate the deployment of deepwater cameras and accelerometers. In addition to collecting biological information about sablefish, new management measures required the collection of coral and sponge bycatch.

Sablefish fishing in the "Northern Seamount Fishery Area", including SK-B MPA, was conducted between May 1, 2016 and May 14, 2016 by the fishing vessel (F/V) *Ocean Aggressor* and between May 29, 2016 and June 29, 2016 by the fishing vessel (F/V) *Pacific Viking*. Fishing was permitted during May and June 2016 under the authority of amended conditions of 2016/2017 Sablefish licence, issued by Fisheries and Oceans Canada (DFO). A licence issued under the authority of section 52 of the Fishery (General) Regulations permitted the retention of coral and sponge samples. At-sea observer sample and data collection requirements were completed by a DFO-certified groundfish observer employed by Archipelago Marine Research Ltd. (Archipelago). At-sea observer services were funded by Wild Canadian Sablefish Ltd. (WCS).

2.0 METHODS

During the F/V *Ocean Aggressor'*s May and F/V *Pacific Viking*'s June trip to the Northern Seamount Fishery Area the at-sea observer was tasked with collecting catch data and bridge log data, and was responsible for coordinating the deployment and retrieval of the deepwater cameras, accelerometers, and temperature/depth recorders. The at-sea observer collected catch information, including the weight and number of pieces of each species encountered, and whether the catch was retained or released at-sea. The at-sea observer collected detailed bridge log data using the vessel's navigational instruments for each fishing event. Bridge log data included fishing location information, fishing time, bait used, and a description of the fishing gear deployed. The deployment and retrieval of the deepwater cameras, accelerometers, and temperature/depth recorders, was done in accordance with DFO guidelines (DFO, 2016). Detailed bridge log and catch information for each fishing event were submitted to DFO's Fishery Operations System (FOS). Data are available in FOS under Trip Identification Numbers 310189 for the F/V *Ocean Aggressor* trip and 311863 for the F/V *Pacific Viking* trip.

Biological data was collected by the at-sea observer throughout the trip according to a sampling protocol and schedule established for the Northern Seamount Fishery Area by DFO (DFO, 2016). Samples collected by the at-sea observer included length/sex/maturity/otolith (LSMO) data, and DNA tissue samples from sablefish, Rougheye rockfish (*Sebastes aleutianus*), and

Blackspotted rockfish (*Sebastes melanostictus*).The sampling protocol also required some sablefish to be measured, tagged and released to sea. Previously tagged sablefish encountered in the catch were sampled for length/sex/maturity/otolith data, and the tag number was recorded.

2.1 AT-SEA OBSERVER CORAL AND SPONGE CATCH REPORTING AND SAMPLE COLLECTION

The at-sea observer deployed during the May fishing activity in the Northern Seamount Fishery Area collected coral and sponge bycatch in accordance with the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements ("Data Collection Requirements") (Buchanan et. al., 2015).

For the purpose of documenting sponge and coral encountered during fishing activity on SGaan Kinghlas – Bowie Seamount sponge and coral were defined as:

- Phylum Porifera (Sponges): inclusive of organisms belonging to Class Calcarea (Calcareous sponges); Class Hexactinellida (Glass sponges); or Class Demospongiae (Demosponges).
- Phylum Cnidaria (Corals): inclusive of organisms belonging to Order Antipatharia (Black corals); Order Scleractinia (Cup corals); Order Pennatulacea (Sea pens and whips); Suborder Alcyoniina (Soft corals); Suborder Scleraxonia (Bone-like corals) including Family Paragorgiidae (Bubblegum corals) and Family Plexauridae (Horny tree corals); Family Stylasteridae (Hydrocorals); Family Isididae (Bamboo corals); or Family Primnoidae (Red-tree corals).

The at-sea observer reported all catches of coral and sponge to the lowest possible taxonomic level that was practical based on the tools, identification support materials, and time available. Each coral and sponge catch record was reported by pieces and weight (wet weight to the nearest 1 pound), with catches less than 0.5 pounds reported as a trace quantity. Coral and sponge samples were collected where possible, without interfering with other duties required for the collection of catch and effort data, groundfish biological samples, and the deployment and retrieval of trap cameras and accelerometers.

As defined by the Data Collection Requirements, the at-sea observer collected samples of each coral and sponge species encountered to allow for subsequent species identification or verification. Specimens were individually frozen in a re-sealable zipper storage bag, with a pre-completed waterproof label containing trip identification information. Each sample collected was inventoried on a Coral and Sponge Sample Summary worksheet. If the sample was small (<20-30 cm), the entire organism/colony was retained. For larger specimens, a 20-30 cm section of the organism/colony was retained. Attention was paid to retain a section of the specimen that included those features important to its identification. When a coral or sponge was encountered in smaller fragments, a sample of the fragments was collected together, provided that the fragments were large enough to allow for its subsequent identification. The at-sea observer also

collected photographs of corals and sponges encountered according to the Data Collection Requirements. Sample and photo collection was completed once for each species encountered during the trip. Where possible, photographs included a ruler for measurement purposes and a label referencing the photograph to the catch record and fishing event. Photographs included a picture of the entire organism or colony, as well as close up photos of the key identification features. Each series of photographs collected for each species of coral or sponge was inventoried on a Coral and Sponge Sample Summary worksheet.

All coral and sponge samples and photographs were submitted to Archipelago, along with the at-sea observer trip report and data package. Particular care was taken to ensure that frozen samples remained frozen during delivery. Coral and sponge samples were examined by staff at Archipelago and the Royal British Columbia Museum (RBCM). At the RBCM, all submitted specimens of corals and sponge were further examined using a dissecting and a compound microscope. The specimens were identified on the basis of diagnostic characters, unique to each species as defined in the primary literature. Further descriptions and references are contained in Figures 1-8. All samples submitted were then preserved in 70% ethanol and incorporated into the invertebrate collection at the RBCM for future reference.

2.2 FISHING ACTIVITY AND SAMPLE COLLECTION

The F/V *Ocean Aggressor* completed ten (10) fishing events in the Northern Seamount Fishery Area between May 1, 2016 and May 14, 2016. The F/V *Pacific Viking* completed 66 fishing events in the Northern Seamount Fishery Area between May 29, 2016 and June 29, 2016. Fishing activities conducted by the vessel targeted sablefish using traps. Deepwater cameras, accelerometers and temperature/depth recorders were deployed on 33 fishing events by the at-sea observer and vessel crews. The at-sea observer collected LSMO data from 87 individual sablefish. The at-sea observer also collected LSMO data from 318 individual Rougheye rockfish/Blackspotted rockfish in addition to DNA tissue samples from 318 individuals. A sample of 122 sablefish captured during the trips were tagged and released while 13 previously tagged sablefish that were captured were sampled on board. All biological data were provided to DFO science staff for inclusion in the Pacific region groundfish science data system (GFBio).

The at-sea observer reported that sponges were caught on three occasions; corals were caught 19 times during the 76 fishing events completed during the two trips. The catches were comprised of two species of sponge and six species of coral that could be confirmed from samples and photographs submitted by the observer. All coral and sponge catch records are summarized in Table 1. Coral and sponge samples that were provided to the RBCM for further identification are summarized in Table 2. The at-sea observer submitted photographs of corals and sponges encountered during the trip including those where samples were collected (Figures 1-8).

3.0 RESULTS AND DISCUSSION

This coral and sponge collection and identification protocol implemented in May 2014 and repeated in May 2015, May 2016 and June 2016, is the first formal process to identify corals and sponges caught in the Zone 2 of the SK-B-MPA as part of modern commercial seamount fisheries. Previous coral and sponge sample collection activities were performed in an opportunistic fashion during at-sea observer assignments. The at-sea observer on the May 2016 and June 2016 trips successfully completed the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements. The photographs and samples collected were sufficient to allow staff at Archipelago and the RBCM to confirm the identification of each sample. Freezing samples allowed for subsequent identification and preservation of the collected specimens. For the purpose of guiding effective sample and data collection, the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements do not require procedural changes. As management measures evolve in response to fishery and conservation objectives, the Data Collection Requirements should be reviewed to ensure that the procedures continue to collect the information required for management.

4.0 ACKNOWLEDGEMENTS

Wild Canadian Sablefish Ltd. is recognized for organizing and funding the sample collection activities and the ongoing science activities at SGaan Kinghlas-Bowie Seamount. The skipper and crew of the F/V *Ocean Aggressor* and F/V *Pacific Viking* are recognized for their assistance with the science activities and sample collection work completed by the at-sea observer during the May and June 2016 North sablefish seamount trips. Fisheries and Oceans Canada funded the sample processing and reporting activities associated with this project. The Royal BC museum dedicated the staff time and resources required to preserve and identify each sample collected for this work.

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TABLE 1: Summary of coral and sponge catch from May and June 2016 Sablefish fishing activity at SGaan Kinghlas-Bowie Seamount. Samples were retained under the authority of section 52 of the Fishery (General) Regulations by the at-sea observer onboard the fishing vessels *Ocean Aggressor* and *Pacific Viking*.

Table 1: Summary of coral and sponge catch

Trip Number	Fishing Event Number	Haul Date	Common Name	Latin Name	Catch Weight (kg)	Frozen Sample Retained
310189	3	May 10, 2016	Sea Fan	Primnoidae	Trace	Y
310189	8	May 12, 2016	Glass Sponge	*Rhabdocalyptus sp.*	Trace	Y
311863	1	June 2, 2016	Sea Fan	*Parastenella ramosa*	Trace	N
311863	6	June 4, 2016	Sea Fan	*Parastenella ramosa*	Trace	Y
311863	11	June 6, 2016	Sea Fan	*Parastenella ramosa*	0.5	N
311863	13	June 6, 2016	Sea Fan	*Parastenella ramosa*	Trace	N
311863	15	June 6, 2016	Red Tree Coral	*Primnoa pacifica*	9.1	Y
311863	18	June 8, 2016	Glass Sponge	*Homoieurete sp.*	0.5	Y
311863	19	June 8, 2016	Red Tree Coral	*Primnoa pacifica*	0.9	N
311863	34	June 14, 2016	Sea Whip	*Stylatula sp.*	Trace	Y
311863	36	June 16, 2016	Bubblegum Coral	*Paragorgia yutlinux*	0.5	Y
311863	36	June 16, 2016	Sea Fan	*Parastenella ramosa*	0.5	N
311863	43	June 18, 2016	Sea Fan	*Parastenella ramosa*	Trace	N
311863	43	June 18, 2016	Glass Sponge	Hexactinellida	Trace	N
311863	45	June 18, 2016	Sea Fan	*Parastenella ramosa*	Trace	Y
311863	45	June 18, 2016	Bubblegum Coral	*Paragorgia yutlinux*	Trace	Y
311863	46	June 20, 2016	Bamboo Coral	*Isidella sp.*	Trace	Y
311863	47	June 20, 2016	Bamboo Coral	*Isidella sp.*	Trace	N
311863	51	June 22, 2016	Red Tree Coral	*Primnoa pacifica*	Trace	N
311863	59	June 24, 2016	Red Tree Coral	*Primnoa pacifica*	Trace	N
311863	62	June 24, 2016	Gorgonian Coral	Gorgonacea	Trace	N
311863	66	June 25, 2016	Red Tree Coral	*Primnoa pacifica*	Trace	N

TABLE 2: Coral and sponge samples from May and June 2016 Sablefish fishing activity provided to the Royal British Columbia Museum for identification. Samples were collected by the at-sea observer onboard the fishing vessels *Ocean Aggressor* and *Pacific Viking* during fishing activities at SGaan Kinghlas-Bowie Seamount.

Table 2: Coral and sponge samples

Trip Number	Fishing Event Number	Haul Date	Common Name	Latin Name	RBCM Catalogue Number	Report Figure
310189	3	May 10, 2016	Sea Fan	Primnoidae	016-00226-001	Figure 1.
310189	8	May 12, 2016	Glass Sponge	*Rhabdocalyptus sp.*	016-00227-001	Figure 7.
311863	6	June 4, 2016	Sea Fan	*Parastenella ramosa*	016-00228-001	Figure 2.
311863	15	June 6, 2016	Red Tree Coral	*Primnoa pacifica*	016-00229-001	Figure 3.
311863	18	June 8, 2016	Glass Sponge	*Homoieurete sp.*	016-00230-001	Figure 8.
311863	34	June 14, 2016	Sea Whip	*Stylatula sp.*	016-00231-001	Figure 4.
311863	36	June 16, 2016	Bubblegum Coral	*Paragorgia yutlinux*	016-00232-001	Figure 5.
311863	45	June 18, 2016	Sea Fan	*Parastenella ramosa*	016-00233-001	Figure 2.
311863	45	June 18, 2016	Bubblegum Coral	*Paragorgia yutlinux*	016-00233-002	Figure 5.
311863	46	June 20, 2016	Bamboo Coral	*Isidella sp.*	016-00234-001	Figure 6.

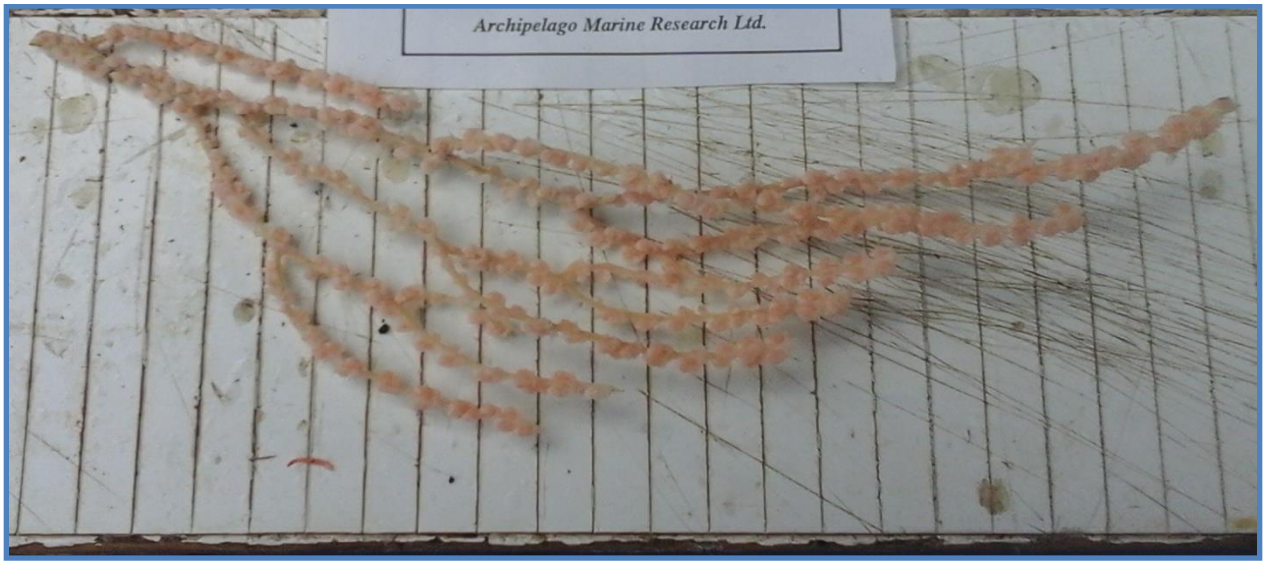

Figure 1: Primnoidae

Name: Primnoidae (Cairns, 2007).

Description: Tree-like colony dichotomously branched; live polyps are pink white; polyps small (<3mm) and face downward; polyps arranged in pairs or whorls around stem and branches. (Photo: Archipelago Marine Research Ltd.). Grid lines in the photo are 1 cm apart.

Figure 2: ***Parastenella ramosa***

Name: *Parastenella ramosa*, (Cairns, 2007).

Description: Bushy colony dichotomously branched; polyps (<3mm) arranged in pairs or whorls around stem; calyces in singles, pairs and whorls of 3, generally oriented perpendicular to branch or downwards; marginal scales (8) of polyps do not fold over bases of opercular scales, elongated and often fluted; opercular scales alternate with marginal scales, roughly equal in size with highly keeled inner surface. (Photos: Archipelago Marine Research Ltd.)

Figure 3: ***Primnoa pacifica***

Name: *Primnoa pacifica* (Cairns & Bayer, 2005)

Description: Large tree-like colony dichotomously branched; skeleton may be calcified at the base; live polyps are orange to red; polyps large (>3mm) and face downward; polyps crowded around stem and branches; basal scales of most polyps larger than medial scales and usually with prominent marginal spine. (Photos: Archipelago Marine Research Ltd.)

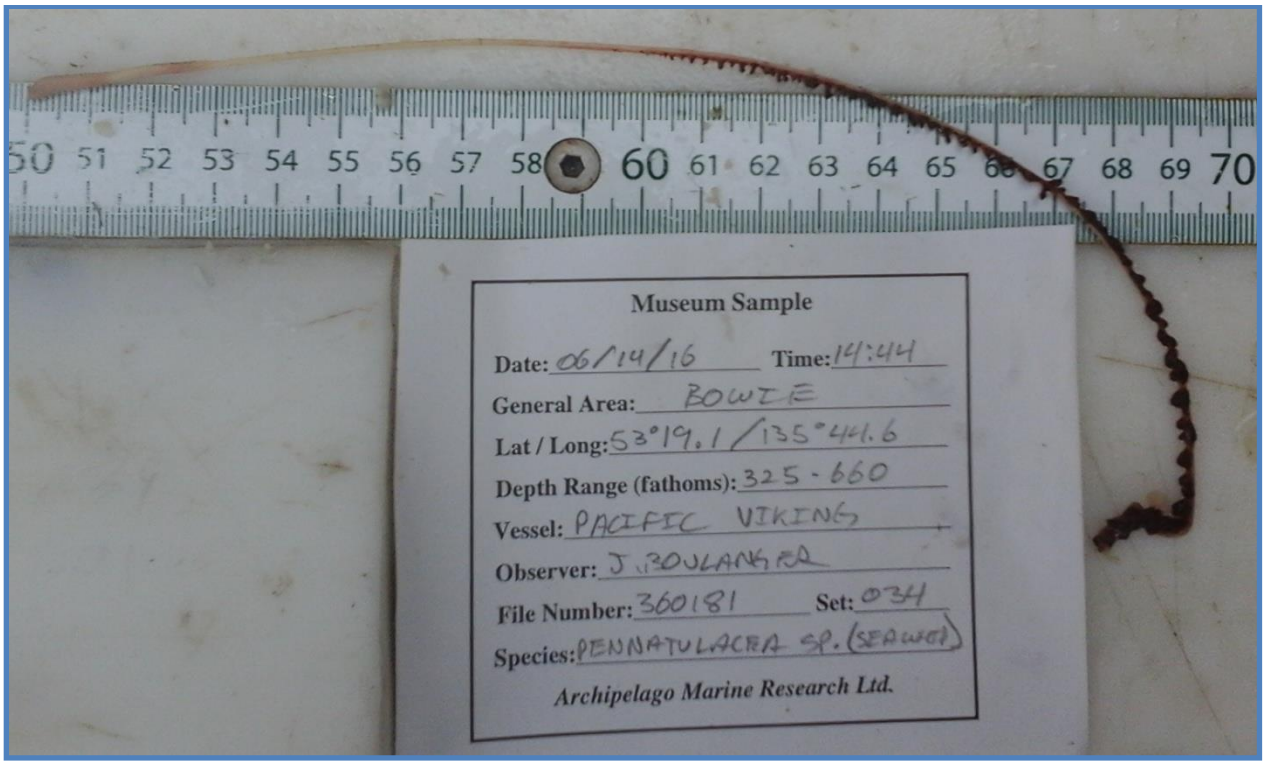

Figure 4: ***Stylatula sp.***

Name: *Stylatula sp.*

Description: Colonies long, slender, not especially fleshy; rachis rough to touch (projecting calcareous spicules); rachis rod shaped with dorsal radial canals; slender peduncle; polyp leaves well developed short and densely arranged on rachis; sclerites present and as needle or spindle-shaped, forming strong fan-shaped armature at base of each polyp leaf; autozooids well separated and lacking spicules; supporting plate with 10-12 large spicules; approximately 13-18 autozooids on typical leaf. (Photo: Archipelago Marine Research Ltd.)

Figure 5: ***Paragorgia yutlinux***

Name: *Paragorgia yutlinux* (Sanchez, 2005).

Description: Colony erect and branching in several planes; terminal branch width <4mm; coenenchyme colourless and dark (purple) autozooid apertures; surface sclerites symmetrical (all rays equal) mostly with 6-radiates. (Photos: Archipelago Marine Research Ltd.)

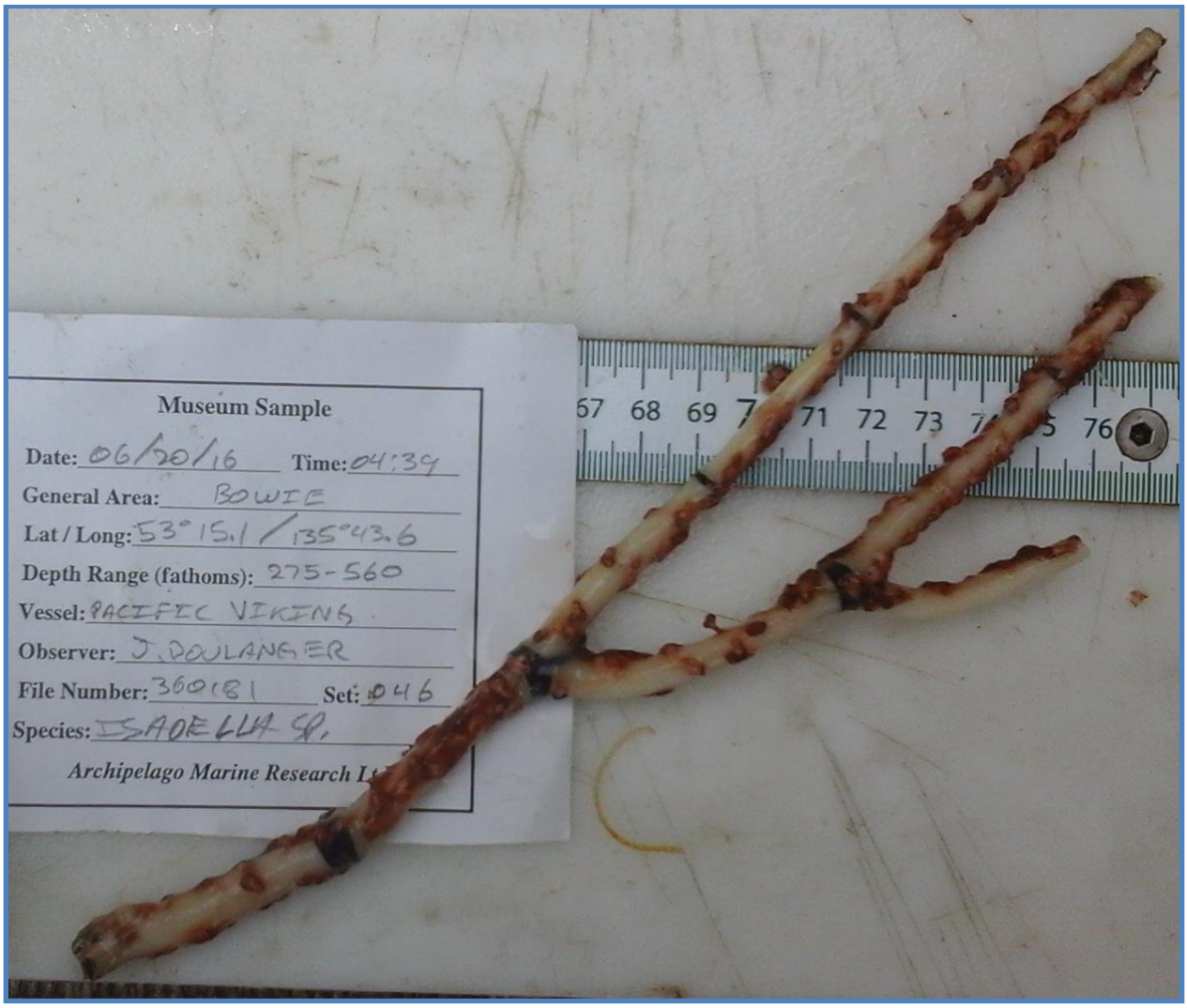

Figure 6: ***Isidella sp.***

Name: *Isidella sp.* (Wing & Barnard, 2004).

Description: Skeleton segmented, alternating non-spicular calcareous internodes (white) and horny nodes (black); skeleton branches from horny nodes; internodes 2 to 10 cm; polyps red to orange in colour; polyps non-retractile. (Photo: Archipelago Marine Research Ltd.)

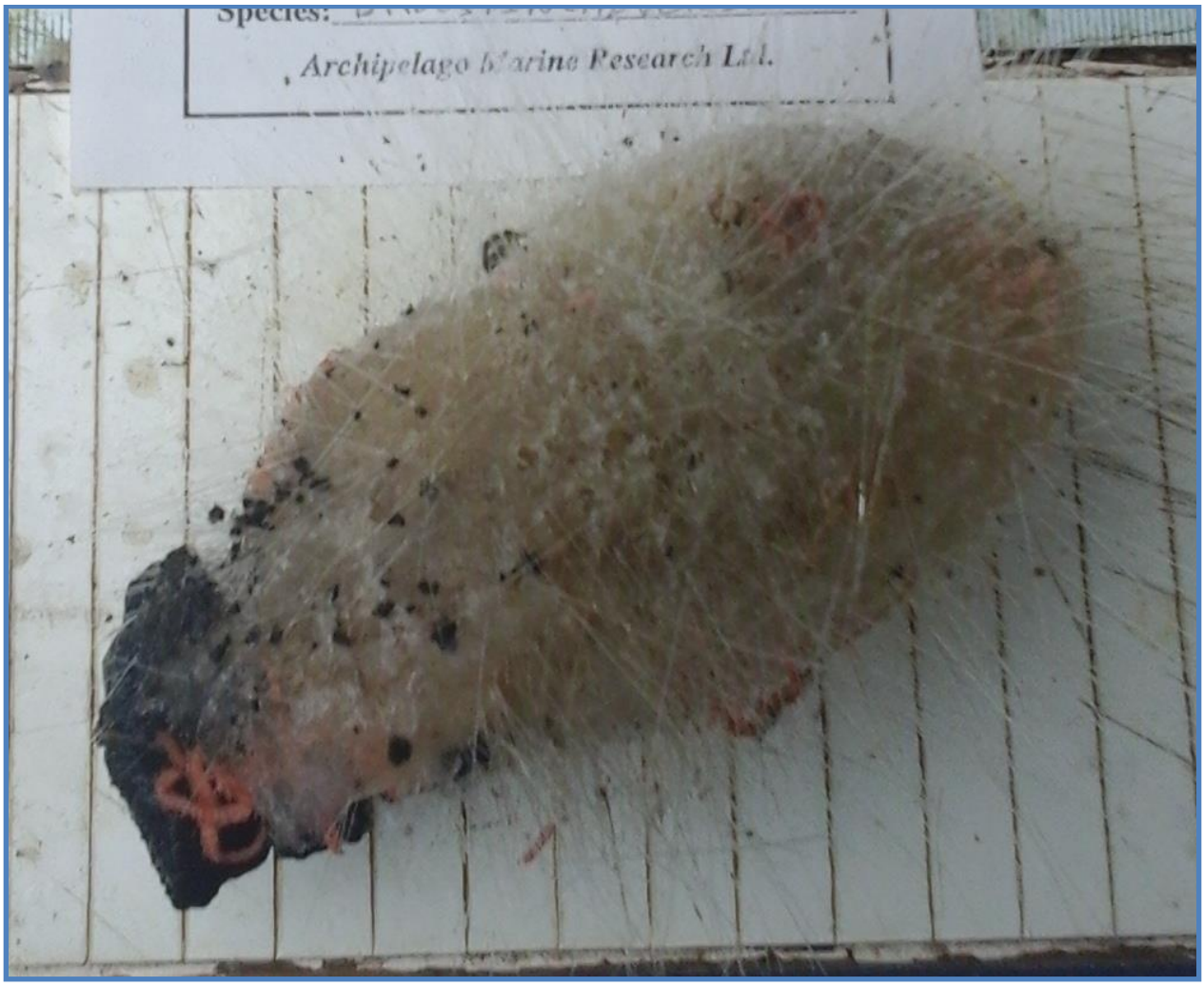

Figure 7: ***Rhabdocalyptus sp.***

Name: *Rhabdocalyptus sp.* (Reiswig, In Preparation)

Description: This is a species that will be described in detail in a publication by H.M. Reiswig that is currently being prepared. Spiky, barrel-like sac attached basally to hard substrate. Consistency is soft and compressible. Height of specimen is 10 cm. Body colour is white. (Photo: Archipelago Marine Research Ltd.). Grid lines in the photo are 1 cm apart.

Figure 8: ***Homoieurete sp.***

Name: *Homoieurete sp.* (Reiswig, In Preparation)

Description: Frilly sponge with thick walls. Colour is white to beige. This is a species that will be described in detail in a publication by H.M. Reiswig that is currently being prepared. (Photo: Archipelago Marine Research Ltd.)